Amendment to the Claims

This listing of claims will replace all prior versions and listing of claims in the application:

Listing of Claims:

1. – 39. (canceled)

40. (new) A method of locating a portion of tissue with a characteristic of interest, the method comprising the steps of:

(a) applying a chemical agent to a tissue;

(b) obtaining a temporal sequence of images of the tissue following application of the chemical agent to the tissue;

(c) determining a measure of similarity between two selected regions of the tissue, the measure of similarity indicating how similarly tissue in each region responds to the chemical agent;

(d) repeating step (c), thereby differentiating regions according to how tissue in each region responds to the chemical agent; and

(e) locating a portion of the tissue with a characteristic of interest, the located portion corresponding to at least one of the differentiated regions.

41. (new) The method of claim 40, wherein step (c) further comprises merging the two selected regions into a single region if the measure of similarity satisfies a predetermined criterion.

42. (new) The method of claim 41, wherein steps (c) and (d) together comprise iteratively segmenting an area of the tissue into regions according to evolution of mean intensity of each region following application of the chemical agent.

43. (new) The method of claim 40, wherein step (d) comprises repeating step (c) for each of a plurality of pairs of selected regions.

44. (new) The method of claim 40, wherein the measure of similarity indicates a similarity in evolution of mean intensity of each region following application of the chemical agent.

45. (new) The method of claim 40, wherein step (c) comprises computing an N-dimensional dot product of mean signal intensities of the two selected regions.

46. (new) The method of claim 40, wherein the chemical agent comprises a member selected from the group consisting of acetic acid, formic acid, propionic acid, butyric acid, Lugol's iodine, Shiller's iodine, methylene blue, toluidine blue, and indigo carmine.

47. (new) The method of claim 40, wherein the chemical agent comprises acetic acid.

48. (new) The method of claim 40, further comprising the step of:

(f) determining a condition of the located portion.

49. (new) The method of claim 48, wherein the condition comprises a member selected from the group consisting of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

50. (new) The method of claim 48, wherein step (f) comprises determining a condition of the located portion based at least in part on evolution of mean intensity of the located portion.

51. (new) The method of claim 48, wherein step (f) further comprises obtaining a biopsy specimen within the located portion prior to determining the condition of the located portion.

52. (new) The method of claim 40, wherein the characteristic of interest is a suspicion of pathology.

53. (new) The method of claim 40, wherein the tissue comprises cervical tissue.

54. (new) The method of claim 40, wherein the tissue comprises at least one member selected from the group consisting of epithelial tissue, colorectal tissue, skin, and uterine tissue.

55. (new) The method of claim 40, further comprising the step of illuminating the tissue using a white light source, a UV light source, or both.

56. (new) A method of differentiating regions of a tissue, the method comprising the steps of:

(a) accessing a temporal sequence of images of a tissue following application of a chemical agent to the tissue;

(b) determining a measure of similarity between two selected regions of the tissue, the measure of similarity indicating how similarly tissue in each region responds to the chemical agent; and

(c) repeating step (b), thereby differentiating regions according to how tissue in each region responds to the chemical agent.

57. (new) The method of claim 56, wherein step (b) further comprises merging the two selected regions into a single region if the measure of similarity satisfies a predetermined criterion.

58. (new) The method of claim 57, wherein steps (b) and (c) together comprise iteratively segmenting an area of the tissue into regions according to evolution of mean intensity of each region following application of the chemical agent.

59. (new) The method of claim 56, wherein step (c) comprises repeating step (b) for each of a plurality of pairs of selected regions.

60. (new) The method of claim 56, wherein the measure of similarity indicates a similarity in evolution of mean intensity of each region following application of the chemical agent.

61. (new) The method of claim 56, wherein step (b) comprises computing an N-dimensional dot product of mean signal intensities of the two selected regions.

62. (new) The method of claim 56, wherein the chemical agent comprises a member selected from the group consisting of acetic acid, formic acid, propionic acid, butyric acid, Lugol's iodine, Shiller's iodine, methylene blue, toluidine blue, and indigo carmine.

63. (new) The method of claim 56, wherein the chemical agent comprises acetic acid.

64. (new) The method of claim 56, further comprising the step of:

(d) locating a portion of the tissue with a characteristic of interest, the located portion corresponding to at least one of the differentiated regions.

65. (new) The method of claim 64, further comprising the step of:

(e) determining a condition of the located portion.

66. (new) The method of claim 65, wherein the condition comprises a member selected from the group consisting of normal squamous tissue, metaplasia, CIN I, CIN II, CIN III, and CIN II/III.

67. (new) The method of claim 65, wherein step (e) comprises determining a condition of the located portion based at least in part on evolution of mean intensity of the located portion.

68. (new) The method of claim 56, wherein the tissue comprises cervical tissue.

69. (new) The method of claim 56, wherein the tissue comprises at least one member selected from the group consisting of epithelial tissue, colorectal tissue, skin, and uterine tissue.

70. (new) A system for differentiating regions of a tissue, the system comprising:

a light source that illuminates a tissue;

a camera that obtains a temporal sequence of images following application of a chemical agent to the tissue; and

software that performs the steps of:

(i) based at least in part on the temporal sequence of images, determining a measure of similarity between two selected regions of the tissue, the measure of similarity indicating how similarly tissue in each region responds to the chemical agent; and

(ii) repeating step (i), thereby differentiating regions according to how tissue in each region responds to the chemical agent.